

REMARKS

Drawings Rejection - 37 C.F.R. §1.84(p)(5)

The drawings were objected to because they did not include a reference to cross-strut member 44. As the safety cage 22 members are all referred to and referenced in the drawings as elongated tie members 42, there is no cross-strut member 44. Accordingly, Applicant has deleted this description reference from the patent application specification (i.e., from paragraph [0033]) and, therefore, the basis for this rejection is now moot.

Claims Rejection - 35 U.S.C. §112

Claims 44 and 45 were rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention because of the acronym NACA. Applicant has amended the specification (i.e., paragraph [0039]) to provide that the acronym for NACA is National Advisory Committee for Aeronautics. Applicant has further likewise amended Claims 44, 54, and 55. Claim 45 was not amended as this claim does not include the NACA acronym. Accordingly, Applicant asserts that this rejection has been obviated.

Claims Rejection - 35 U.S.C. §112

Claim 1 was rejected for insufficient antecedent basis for the limitation “the other of the helically twisted blade.” Applicant has deleted this limitation and clarified the claim, thereby, removing this rejection.

Claims Rejection - 35 U.S.C. §112

Claims 8, 9, 15, 17, 18, 20, 21, and 29 were rejected for insufficient antecedent basis for the limitation “vane segment.” Applicant has amended Claim 8 to provide antecedent basis for “a plurality of elongated vane segments.” Applicant has also amended, if necessary, Claims 9, 10, 11, 14, 15, 17, and 18 to be dependent upon Claim 8, thereby, providing proper antecedent basis in these claims for the “vane segment” limitation.

Applicant has amended Claim 19 to provide antecedent basis for “a plurality of elongated flexible vane segments.” Applicant has also amended, if necessary, Claims 20-24, 26-28, and 29 to clarify the proper element and to be dependent upon Claim 19, thereby, providing proper antecedent basis in these claims for the “flexible vane segment” limitation.

Claims Rejection - 35 U.S.C. §102

Claims 1, 7, 30, 68, 115, 116, 117, and 119 were rejected as being anticipated by Canadian Patent 1,236,030 to Joutsiniemi. Applicant respectfully disagrees.

In Joutsiniemi, a rotor for a wind rotor device is disclosed comprising a pair of elongated wings, a shaft, and a plurality of elongated, generally blade-like support ribs that rigidly interconnect, at spaced intervals, the outer edge of each wing with the inner edge of the other wing. The rib arrangement increases the stability of the rotor and, at the same time, improves the wind flow conditions within the rotor. [Abstract]. The ribs are also arranged in substantially perpendicular relationship to the geometrical axis and their cross section is convex in the upper direction of the rotor. [Page 4].

Contrary to the Examiner's assertion, the wind rotor device of Joutsiniemi does not disclose, teach, or suggest Applicant's wind turbine apparatus.

First, the blade-like support ribs are just that, support ribs that are used to increase the stability of the rotor. To accomplish this, the blade-like support ribs are rigidly interconnected to the outer wing of one wing with the inner edge of the other wing. Applicant's wind turbine device likewise requires support struts 46, 48, and 50 for stability. However, these support struts 46, 48, and 50 are not used as airfoils. Furthermore, unlike the blade-like support ribs in Joutsiniemi, Applicant's airfoil blades 26a and 26b do not provide any support for the helically twisted blade.

Second, as the blade-like support ribs are used as support, the blade-like support ribs are mounted within the curved, preferably semi-circular, cross section of the pair of elongated wings. As a result, the support ribs are mounted *inside* and dependent upon the wings in Joutsiniemi. By stark contrast, Applicant's airfoil blades are mounted *outside* of the outer diameter of the helically twisted blade and provide lift and power to the wind turbine apparatus independent of the helically twisted blade.

Third, in Joutsiniemi, the inflowing air into the rotor will be received by the elongated wings and, if there is sufficient inflowing air, the rotor will begin to rotate. The blade-like support ribs are also disclosed to improve the wind flow conditions within the rotor by guiding the inflowing air into the axial direction of the wings. [Page 4, ¶4]. Applying Joutsiniemi's theory, as illustrated in Figure 3, would mean that, from one direction, the inflowing air must be received or collected into the concave portion of wing 2. The blade-like support ribs, located *inside* wing 2, would apparently also assist in guiding the air into the rotor. The result is that wing 2 and the blade-like support ribs will cause the rotor to rotate clockwise about the geometric axis. While wing 2 is moving, wing 1 will rotate in the clockwise direction about the geometric axis. As wing 1 will be moving in the opposite direction of the inflowing air, the convex portion of wing 1 will be inhibiting the rotation of the rotor. This will be referred to as "drag." As the blade-like support rib is located *inside* the concave portion of wing 1, wing 1 is covering the entire support rib and completely preventing it from engaging any inflowing air.

Thus, the support rib provides no assistance or lift for wing 1 when wing 1 is providing drag. As a result, the drag aspects of this wind rotor act much like that of a Savonius type rotor which means that it acts mostly in a drag condition.

Applicant's wind turbine apparatus, on the other hand, is very different than the Joutsiniemi device. Referring to Figure 8, in one direction, Applicant's helically twisted blade 24b receives and collects the inflowing wind to cause the blade to rotate. While the helically twisted blade 24b is moving, Applicant's helically twisted blade 24a will rotate in the opposite direction of the inflowing air and cause a "drag" on the rotor. However, unlike in Joutsiniemi where the blade-like support ribs are completely blocked from the inflowing air by wing 1 and rendered useless, Applicant's wind turbine device has an airfoil blade 26b that is located *outside* of the helically twisted blade 24a and is generating lift. As this airfoil blade 26b is *outside* of the helically twisted blade 24a and is moving in the opposite direction of the inflowing wind, this airfoil blade 26b harnesses the wind and generates lift. Thus, in Applicant's invention, the airfoil blade will be generating lift when the helically twisted blade 24a is producing drag. This is very different and opposite of what is taught in Joutsiniemi. Based on these differences and referring to Figure 11, the results are clear. Applicant's "Hybrid wind turbine" is clearly more efficient and has a much greater blade tip speed to wind speed than Savonius type rotors.

Applicant asserts therefore that Claims 1 and 115, as amended, are neither disclosed, taught, or suggested by Joutsiniemi. Furthermore, based on the above, the disclosures in Joutsiniemi actually teach away from Applicant's device. Accordingly, Applicant asserts that Claims 1 and 115, as amended, present allowable subject matter.

As Claims 7, 30, and 68 depend from independent Claim 1 which, as amended, presents allowable subject matter and Claims 116, 117, and 119 depend from independent Claim 115 which, as amended, presents allowable subject matter, Claims 7, 30, 68, 116, 117, and 119 likewise present allowable subject matter.

Claims Rejection - 35 U.S.C. §103

Claims 2, 10, 11, 12, 13, 19, 22, 24, 28, 29, 31, 32, 56, 120, 121 were rejected as being unpatentable over Joutsiniemi in view of Trigilio (U.S. Patent 4,551,631).

Claims 4, 5, and 36 were rejected as being unpatentable over Joutsiniemi in view of Smith (U.S. Patent 1,100,332).

Claims 3 and 122 were rejected as being unpatentable over Joutsiniemi in view of Yea (U.S. Patent 5,463,257).

Claims 9 and 21 were rejected as being unpatentable over Joutsiniemi and Trigilio and in view of Link (U.S. Patent 6,358,009).

Claims 14, 47-53 were rejected as being unpatentable over Joutsiniemi and Trigilio and in view of Moriaki (JP 60-090992).

Claims 27 and 33 were rejected as being unpatentable over Joutsiniemi and Trigilio and in view of Teasley (U.S. Patent 4,318,019).

Claim 34 was rejected as being unpatentable over Joutsiniemi and Trigilio and in view of Mead (U.S. Patent 4,229,661).

Claims 6, 37-39, and 41 were rejected as being unpatentable over Joutsiniemi and Smith and in view of Minh (U.S. Patent 5,982,046).

Claims 43, 71, 72, and 73 were rejected as being unpatentable over Joutsiniemi and Smith and Minh and in view of Russell (U.S. Patent 6,172,429).

Claim 44 was rejected as being unpatentable over Joutsiniemi in view of Rocklitz (U.S. Patent 6,451,080).

Claim 118 was rejected as being unpatentable over Joutsiniemi in view of Goldwater (U.S. Patent 4,684,817).

Claims 57 and 58 were rejected as being unpatentable over Joutsiniemi in view of Jamieson (U.S. Patent Application 2003/0230898).

Claims 8, 20, and 42 were rejected as being unpatentable over Joutsiniemi, Trigilio, Smith, and Minh and in view of ordinary skill in the art.

Claims 15-18, 23, 25, 35, 45, 46, 54, 55, 59-67, 69 and 70 were rejected as being unpatentable over Joutsiniemi, Trigilio, Smith, Moriaki, and in view of ordinary skill in the art.

Claims 26 and 40 would be allowable if rewritten to overcome the 112 rejections and to include all of the limitations of the base claim and any intervening claims.

Response: As Claims 2-73 depend from independent Claim 1 which, as amended, presents allowable subject matter and Claims 116-122 depend from independent Claim 115 which, as amended, presents allowable subject matter, Claims 2-73 and 116-122 likewise present allowable subject matter.

Applicant submits that the application is now in condition for allowance and respectfully requests the Examiner to take such action.

If the Examiner believes that a telephone interview with Applicant's attorney would be beneficial, please do not hesitate to contact the undersigned.

Respectfully submitted,

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